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CLINICAL LECTURE.

GALVANISM IN THE TREATMENT OF DISEASES OF THE UTERUS.[1]

BY JOHN M. FISHER, M. D.

With a view to determine the value of galvanism in the treatment of pelvic disease in women, Professor Parvin, one year ago, gave me a place on the "gynecological clinic" for the purpose of treating such cases as I might think proper with the battery. In spite of serious drawbacks that attended our earlier work, and of a skepticism which dominated our minds at the outset, as to its possible value, we must confess to having verified at least some of the reported successes of more competent observers, in evidence of which we have here living witnesses—many of the patients themselves, who have undergone treatment by this means—to testify to its efficacy.

After giving the salient features in the history of each case, it may be well for you to note the number and time of the sittings, the pole that was placed in the vagina or uterus, the intensities as expressed in milliampères, and the results. A demonstration of the galvanic apparatus, with an explanation of its mode of action, and the treatment of a case in your presence, will occupy our attention at a subsequent lecture.

Case 1. Mrs. G——, æt. 21, married. I removed this woman's uterine appendages fifteen months ago for the cure of a septic salpingitis following a miscarriage. She made a good recovery. Soon afterwards, however, she began to have profuse uterine hemorrhages, recurring at irregular intervals, and continuing from one to three weeks. Every medical resource known to me was tried and failed. On May 13, 1890, after she had bled for more than three weeks, a positive intra-uterine application of galvanism was made, 60 milliampères for five minutes, with the result of arresting the bleeding within twelve hours. Since then she has had a mere "show" but once, extending over a period of two days. She is now in the enjoyment of excellent health.

Case 2. November 18, 1889, I was called to see Mrs. S——, who gave the following history: age forty-two, married, one child nineteen years old, no miscarriages. Six years ago she began to suffer with menorrhagia. She continued to grow worse with time, until within the last two years, she seldom knew of a day that she was "well," the hemorrhage having become almost constant, and at times so excessive that she was frequently obliged to resort to the use of tampons, and to take to her bed for weeks in succession. She stated that she was confined to bed almost half the days of the year, because of this trouble. At the time I was first summoned she had been in bed for more than nine weeks, flooding incessantly, save when this was temporarily arrested with tampons. Her weakened pulse, sunken eyes, blanched face and bloodless appearance of the local and vaginal mucous membranes, at once told the story; and, although she had been under the care of intelligent practitioners, men of large therapeutical resources, the bleeding during all of these nine weeks had not been checked for even a single day. After the removal of a cotton tampon, and the vagina being cleared of clots, blood was seen issuing from the uterine canal. The uterus was found to be enlarged, of a globular form, and freely movable. The anterior lip appeared to be the seat of a small intramural fibroid. The uterine cavity measured four inches. Fibroid uterus was diagnosticated. An intra-uterine positive galvanochemical caustic application of fifty milliampères of five minutes' duration was made;

[1] Delivered at the Jefferson Medical College Hospital, December 9, 1890.

with the result of arresting the hemorrhage at once. Four days later a second application was made, of seventy milliampères, for five minutes. Six days more elapsed and I found the patient sitting up with no hemorrhage. A third application was made, positive, intra-uterine, seventy-five milliampères, five minutes. November 30, slight bleeding recurred and continued for six days. The patient was about all the while, attending to household duties. December 9, positive cauterization, one hundred milliampères, five minutes. This was the fourth and last galvanic treatment until the following May, when five months had elapsed, during which she menstruated regularly, the "flow" extending over periods of four and five days; no clots, no pain. At this time—May 2, 1890—she was again seized with hemorrhages. I was out of the city, and the bleeding continued three weeks. On my return I found the patient in bed, blanched from loss of blood. I made a single positive application of galvanism, 100 milliampères, five minutes, with the result of checking the bleeding within six hours. Six months have elapsed since then, and the patient is in buoyant health and menstruation has been regular, lasting three and four days. A bimanual examination indicates that the uterus has been considerably reduced in size.

Case 3. Lizzie B——, æt. 27, single, has suffered with menorrhagia for four years. Lately the flow has covered periods of three weeks and more, with intervals of only seven and eight days. She suffers with frequent attacks of frontal headache and vertigo, and is extremely nervous and apprehensive. The mucous membranes in general present a blanched appearance. Within the past few years she has lost considerably in weight. Uterus retroflexed but movable, posterior wall the seat of a fibroid the size of a small lemon. June 20, 1890, the patient states that she has been bleeding continuously for three weeks. An application of galvanism, negative, intra-uterine, 40 milliampères, five minutes, was made. Three days later, still bleeding; another negative application, 60 milliampères, five minutes. Four days more elapsed, and she came to the clinic paler and weaker than at any time before, stating that since the previous treatment she had been confined to bed because of the excessive flooding. Blood was still issuing from the uterus quite profusely. A "positive" application, fifty milliampères, five minutes, was now made, with the result of arresting the bleeding within twenty-four hours—after it had persisted for more than four weeks.

Between June 27 and September 1, twelve intra-uterine positive applications of galvanism were made, with intensities of from fifty to one hundred milliampères, five minutes. After the last treatment the patient was taken with colicky pains in the abdomen, attended with nausea, loss of appetite and violent frontal headache, confining her to bed for a week. The last application no doubt excited a certain degree of pelvic inflammation.

This is the only case of all I have had under treatment in which such an unfortunate complication resulted. The patient has no symptoms at present that indicate permanent disability as a result of the attack. She has menstruated regularly since July, the flow covering periods of eight and nine days, and being profuse but not painful. The size of the fibroid has remained stationary. She has gained ten pounds in weight, and the signs of blood deterioration are no longer present.

Case 4. Mrs. R——, æt. 38, married for nineteen years, no children. The patient, on presenting herself at the clinic, had a large, smoothly-rounded fibroid tumor of the uterus extending to within an inch of the ensiform cartilage. She suffered from constant backache, vesical tenesmus, rectal distress, and a feeling of fulness, tension, and dull pains throughout the pelvis, shooting into the thighs—the latter symptom being especially annoying. From November 1, 1889, to November 26, 1890, twenty-nine negative intra-uterine applications of galvanism were made; the intensities varying between 100 and 150 milliampères, five minutes. To-day we have a report to make as follows: She menstruates regularly without pain, the periods covering from three to five days, flow not excessive. The sensations of fulness and tension are very decidedly relieved. The vesical tenesmus, rectal distress and abdominal pains and the pains in her limbs, have all disappeared. One year ago her girth measurement at the umbilicus was thirty-four inches, at present it is thirty inches; and, since this difference obtains with reference to all the measurements taken, I am sure you will not consider it extravagant when I say that this tumor has decreased in size to the extent of at least one-fourth its original bulk one year ago.

Case 5. Mrs. N——, æt. 24, married eight years, four children, one miscarriage nine

months ago after six weeks' gestation, to which she attributes her present ailments. Ever since she has had a profuse bloody discharge recurring at intervals of two weeks and less, at times only a few days intervening between the attacks, continuing for from several days to four and five weeks at a time. It is clotted and attended with considerable suffering. Sexual intercourse is painful, and frequently causes bleeding. She has severe occipital headache during menstruation. She has constant sacro-inguinal pains of a dull character, and a feeling of weight and dragging in the pelvis; all of which, as well as the hemorrhages, when present, are aggravated by exercise. The uterus is retroflexed and movable, the cervix enlarged and highly congested, the uterine canal patulous and measuring three and a half inches.

The bleeding was arrested within a few hours after making a positive intra-uterine application of galvanism, 50 milliampères, five minutes. On June 30, 1890, fourteen days after the first treatment with the battery, the menses appeared and continued for three days, profuse, but not painful. The fourth and last application of galvanism was made August 25, seventy-five milliampères, five minutes. Since treatment was discontinued she has menstruated four successive times, at intervals of twenty-eight and thirty days, with an almost absolute freedom from symptoms. She is no longer distressed with the sensations of weight and bearing down, sexual intercourse provokes neither pain nor bleeding, and she has been free from headache since electrical treatment was first instituted, save an occasional twinge during menstruation. The uterus is reduced in size, the canal contracted, but the flexion remains.

Case 6. Bessie F——, æt. 19, married one and one-half years, never pregnant, menses at fifteen, regular before marriage, continuing seven days, not painful. Shortly after marriage menstruation began to recur at shorter intervals than usual, until it appeared every two weeks; it continued from seven to ten days, clotted, and attended with excruciating colicky pains in the lower abdomen and pelvis. This still persists, and is becoming more pronounced with each succeeding period. The inter-menstrual periods are characterized by a constant feeling of distress over the hypogastrium, amounting—at times—to actual pain, severe enough to keep her awake at night. After five months' treatment with the dilator, combined with constitutional and intra-uterine medication without benefit, she was referred for electrical applications. The uterus was anteflexed and movable, the os the site of a mucoid discharge, the vaginal vault tender to the touch. Just before treatment with the battery was begun she had been bleeding almost continuously for more than a month. September 22 to October 10, 1890, four positive intra-uterine applications of galvanism were made, the highest intensity administered was sixty milliampères, the lowest forty, for five minutes. September 29, three days after the second treatment, the menses appeared, covering a period of five days, and painless. Exactly twenty-seven days had elapsed between the periods—a thing that had not occurred for more than a year before. The menses came at the regular time in November, lasting five days and being painless. Patient now has neither a pain nor an ache.

Case 7. Mrs. A——, æt. 33, married fifteen years, two children, third and last pregnancy ten years ago, miscarriage after three months' gestation, which was attended with excessive flooding. For a period of more than five years subsequently she suffered from frequent and profuse uterine hemorrhages. At present she has what might be termed her regular menstruation at intervals of about four weeks, the "flow" continuing for eight and nine days, profuse, clotted and painful. The inter-menstrual periods are characterized by occasional hemorrhagic discharges, variable in quantity, but not excessive. Sexual intercourse is painful, and frequently followed by bleeding. She suffers from constant inguinal and hypogastric, dull, aching pains, and from a feeling of weight and distress in the pelvis; all of which are aggravated at the time of the menses and following undue exercise. The only time at which she enjoys comparative comfort is while lying in bed. The uterus is in the first stage of prolapse, movable, enlarged and rigid. The cervix is of a pale, ashy color, and enormously enlarged. The uterine canal is patulous, and the site of an ichorous, watery discharge. The cavity measures three and one-quarter inches.

Between July 29 and September 5, 1890 (38 days), five negative intra-uterine applications of galvanism were made, the intensities varying between fifty and seventy-five milliampères, for five minutes. She has menstruated regularly and has been absolutely free from pain since August last. She has

had no bleeding since July. Sexual intercourse is neither painful nor followed by bleeding. The uterus is reduced in size and the canal measures less than three inches, and is contracted and free from discharge. The patient states that she has not been so well for ten years past.

Case 8. Mrs. C——, æt. 45, married 13 years, two children, one miscarriage twelve years ago, after a six and a half months pregnancy, attended with convulsions, and excessive flooding. The convalescence was prolonged, several months elapsing before she was able to resume household duties. The last child was born five years ago, after a normal labor. She dates her present trouble from the miscarriage, after which her menses became more profuse and painful. She has been suffering with constant, heavy, dragging and dull pains through the pelvis ever since, with pain in the back and groins, all symptoms being aggravated on locomotion. At that time menstruation was continued for a week and longer, was abnormally free, and very painful for several days preceding and during the "flow." Leuchorrhœa was profuse. Micturition was frequent at the time of the menses. She had vertical and occipital headache, with frequent nausea and vomiting. The hypogastrium was tender to pressure. The uterus was low down in the vagina, enlarged and movable; the cervix passively congested, eroded and enormously enlarged, the uterine canal patulous, measuring four inches, and the site of a profuse muco-purulent discharge. The vaginal vault was extremely tender to the touch. The abdomen was enlarged and pendulous, requiring a binder during the day, and a pillow to support it at night. The patient has had twenty-one intra-uterine applications of galvanism, both negative and positive, since February 3, the intensities ranging from 35 to 75 milliampères, five minutes. The time elapsing between treatments, owing to the patient's inability to come regularly, has varied between five days and two months. She is still under treatment.

She has undergone a slow but gradual and progressive improvement since the day the battery was first used, both anatomically and symptomatically. The whole uterus has undergone great diminution in size. The cavity now measures less than three inches, and there is decidedly less tenderness of the pelvic floor. The abdominal walls, the patient herself observes, have regained some of their lost tone, so that now the pillow for support at night can be dispensed with. The menses are regular, continue from three to five days, and are painless. The general pelvic distress is much relieved. In her own words, electricity has done her more positive good than all other means of treatment combined for years previously.

Case 9. Agnes F——, æt. 27, single, for a year preceding puberty suffered from frequent attacks of colicky abdominal pains, and constant backache. Her menses began at seventeen, were regular, and continued for one and a half days, scanty. The very inception of the "flow" was always attended with excruciating uterine pains, every moment contributing to her suffering for from five to six hours, rendering the free use of morphia, or whatever narcotic might be at hand, a necessity. She had been under the constant care of physicians for years, and was treated with the battery from January to July, 1888, without benefit. She does not know the kind of electricity that was used, nor how it was administered. She applied at the clinic October 28, 1889. The uterus was in the normal position, and movable, and presented cervical endometritis. A week later the cervix was dilated under ether. Four days subsequently the menses appeared, just as painful as ever. January 3, 1890, negative intra-uterine galvanism was used, 45 milliampères, five minutes. Menses came on in three days and continued for four days—a longer period than ever before—with comparatively little pain. Two negative applications preceded the following period, which began February 6, and continued for five days, painless. The fourth and last galvanic treatment was on February 13, 1890, since which time she has menstruated regularly, the "flow" continuing for four days without pain.

Case 10. Mrs. G——, æt. 28, married two years and a quarter, no children, complained of excessive pain on sexual intercourse, the mere attempt at which excited violent spasmodic contractions of the muscular structure of the vagina, and threw her into a state of nervous excitement and trembling, frequently rendering its accomplishment impossible. The sensibility is of such an aggravated type, that, as soon as the finger touches the vulva, this neuro-muscular condition supervenes, the patient at the same time giving evidence of suffering pain, and evincing great nervous disturbance. This trouble has been the source of much unhappiness between herself and husband

She was under treatment at this clinic two years ago (shortly after marriage) when the application of cocaine and repeated dilatations gave temporary relief. She returned with the disease in an aggravated form. Between September 22 and October 6, 1890, five applications of galvanism were made, vagino-abdominal, 15 to 30 milliampères, five minutes. After the third application the spasm and pain were entirely relieved, and coitus was satisfactory. The cure has remained permanent.

If time permitted I might continue to review the histories of ten additional patients here to-day—cases duplicating some of the various forms of uterine disease already illustrated, and in which the application of galvanism proved its curative properties to no less a degree.

All of these cases had been subjected to various other modes of treatment previous to the employment of electricity, with but slight benefit in some and none at all in others; and in order to be certain that the results obtained are the legitimate outcome of the galvanic applications alone, no other means of treatment were resorted to either during or subsequent to the use of the battery. In some of the cases of chronic parenchymatous metritis especially, improvement would in all probability have attended our efforts much more rapidly, and the end in view would have been attained with greater certainty, had the electrical treatments been supplemented by other therapeutic measures—derivative, antiphlogistic and tonic.

Of six uterine fibroids treated with the battery, four were more or less hemorrhagic in their tendencies; and in every one of them the intra-uterine application of the positive pole proved its hemostatic properties immediate and remote, and the results obtained have been lasting. In only two of the cases has there been a positive and indisputable reduction in size. When we consider, however, that this was the object in view in but three of the entire number of cases treated, it certainly speaks well for the battery. The case in which it failed was a fibroid of enormous size. The patient was under treatment about six weeks, during which the tumor kept on growing at its usual rate. After the eighth application the patient ceased coming to the clinic, and was lost sight of.

Where the object was to arrest hemorrhage alone, the tumors being small, and giving rise to no other untoward symptoms, the indication being met, the treatment was discontinued. In none of the latter has there been any increase in size. On the other hand, I cannot say that any have grown smaller; slight changes may have taken place, but owing to their location, the sense of touch—a most uncertain means of measurement—is our sole reliance in determining their dimensions.

The use of galvanism in the treatment of pelvic adhesions and uterine displacements, save in so far that it often corrected concomitant diseased conditions of the organ and relieved symptoms, appears to have given negative results. But you must not accept my statements on these questions as conclusive. I may have failed where others more skilled in diagnosis, and more dexterous in the use of apparatus, and possibly less timid than myself in applying heavy currents, might have succeeded, and with an increasing experience my views in some respects may undergo a change.

Not every woman coming to your office having a chronic endometritis should have an electrode thrust into her uterus. There are certain diatheses, and diseased conditions of other organs, as well as feebleness of constitution that predispose to the development of this disease, so that it often is but one of several diseased mucous membranes, the result of a special tendency of a constitutional state. Turn your attention to the predisposing cause first; the endometrium may require attention, but not always. Hemorrhage from the uterus even must not be regarded as an invariable evidence of disease of the organ *per se;* it may be, and often is, an expression simply of a general vascular tension, or other constitutional condition, depending upon alcoholic excess, diseased state of the blood-vessels, heart, liver or kidneys, or of impairment of nervous function, which simple hygienic measures and intelligently applied pharmaceutical remedies may correct without any intra-uterine tinkering whatever. Just so with diseased states of the parenchyma of the organ; electricity should be regarded as an auxiliary in their treatment, and not as a "cure-all" to be used in every case, and to the exclusion of everything else. Always bear in mind that a chronically inflamed uterus is enlarged, that it drags upon surrounding structures, and that, owing to interference with the return circulation, it is in a state of constant passive congestion. In conditions like this,

five things are always in order—rest, tonics, saline cathartics, hot vaginal injections, and glycerine tampons. These of themselves, diligently applied, will often bring about vast improvement, and effect a cure in not a few cases. These things considered, we think of the electrode last, because every intra-uterine operation carries with it a certain amount of risk, and nothing should be introduced into the uterine cavity unless it is specially indicated to obtain a definite object in treatment.

It follows, therefore, that a gynecological electrician, above all, should be a good, all-round general practitioner, with special experience in the treatment of pelvic disease. A correct diagnosis is of first importance to successful treatment, and the mere specialist, who sees nothing except through a vaginal speculum, who concerns himself little about the value of drugs and properly regulated regimen, and whose therapeutic armamentarium consists of an applicator, a knife, or an electrode, will frequently fail to give relief, and often do positive harm.

Gynecological diagnosis, among the most experienced, is often difficult and obscure. Dr. Joseph Price reports cases in which ectopic gestation has been diagnosticated as ovarian cystoma, pyosalpinx and fibroid tumors. Fibroids have been denominated ovarian cysts and *vice versa*. Dr. Anna Fullerton reports a case in which a small dermoid cyst had been called a prolapsed ovary, another of "retroflexed uterus fixed by adhesions with hematosalpinx of one side, and hydrosalpinx of the other, accompanied by hemorrhage, which had been thought to be in a condition resulting from miscarriage, and curretting of the uterus was advised, or the application of electricity to the endometrium." An error in diagnosis, such as the one made in the last case, might have proved fatal to the patient had the treatment originally advocated been carried out.

In the present state of our knowledge of pelvic disease, great caution should always be observed lest we do harm by the application of local measures hastily adopted. Founding my convictions upon individual experience, in connection with what I have witnessed at the operating table, I, to-day, do not consider it a safe procedure to make cauterizing intra-uterine applications of galvanism, if evidence of disease of the uterine adnexa is present. That disease of the appendages exists, is sufficient warning, because it is no more given to a gynecological electrician to make an exact diagnosis than it is to the abdominal surgeon whose preconceived opinions are often shown to be erroneous by what he finds on "section."

COMMUNICATIONS.

SUGGESTIONS FOR ABDOMINAL OPERATIONS AND AFTER CARE.

BY WM. GOODELL, M. D.,
PROFESSOR OF GYNECOLOGY IN THE UNIVERSITY OF PENNSYLVANIA.

[The following is the form of letter prepared by Prof. Goodell, to be sent to physicians for whom he expects to perform an abdominal section. It furnishes full instructions in regard to the preparation for operation and the after care of the patient, with the necessary apparatus and appliances.]

Please procure the following articles for the operation of abdominal section to be performed ———, at ——— o'clock, on your patient, ———.

Two yards rubber plaster.

Two rolls of raw cotton, which have been well baked in an oven, and while hot carefully wrapped up in clean brown paper.

Two yards and a half of all-wool flannel, for two binders.

Two pounds of ether, together with an Allis's inhaler; or else a clean towel without a fringe, and a newspaper, with which to make an ether-cone.

Two ounces of Monsel's solution of iron.

One gallon and a half of a 5 per cent. solution of crystalized carbolic acid.

Half an ounce of iodoform.

Some antiseptic cotton and some tablets of corrosive sublimate.

Whiskey, with cup, spoon and sugar.

A pin-cushion, with large pins and safety-pins.

A washstand, with pitcher, basin, slop-jar, soap and nail-brush.

One china basin for the sublimate solution.

Two new tin basins, and one tin cup.

A bucket and a pitcher of hot water.

A small tub and an empty bucket.

Two kettles of boiling water, ready on the range.

Pure cold water in abundance, that has been boiled and kept in covered vessels.

Two large platters, or meat dishes, to be used as trays for the instruments. Or a tin tray may be made nineteen inches long, twelve wide and three deep.

Six bottles filled with hot water and tightly corked.

Three clean kitchen aprons for the operator and his assistants.

One small table for the basins.

Two tables on which to operate, each one not less than four feet long, and about two feet wide. Or an operating table may be made twenty-two inches wide, thirty-one inches high and six feet long.

One empty wine-bottle for the aspirator.

One clean blanket for patient's lower extremities.

Clean towels, clean sheets, clean blankets.

Clean comforters and clean pillows.

Have all the foregoing articles in the room in which the operation is to take place.

Early in the morning of the day preceding that of the operation, let your patient get her bowels thoroughly opened—preferably with Rochelle salts—and afterwards eat sparingly of liquid food. Next morning her lower bowels are to be moved with an enema of soap and water, and the vagina is to be washed out with a douche of a 1 : 2,000 solution of mercuric bichloride. She should then take a warm soap bath, be washed clean by her nurse, put on clean night-clothing and go to a clean bed.

To avoid ether-vomiting her breakfast should consist merely of tea and toast, or of a cup of beef-tea, or of a goblet of milk, and, thereafter, she must eat nothing more. She must not get up, but must stay in bed until the hour fixed upon for the operation, when she should put on a flannel sacque and woolen stockings and drawers. The bedstead, on which your patient is to lie after the operation, should be furnished with a mattress and not with a feather-bed.

The room in which the operation is to take place ought to be a separate one, so that the patient may be etherized in her sleeping-room, and not be unnerved by witnessing the needful preparations. Several days beforehand, the carpet of this operating room should be taken up, and the curtains taken down for good. The closets and bureau-drawers should be emptied, and the whole room—floor and walls—be thoroughly cleansed and aired. Early in the morning of the day fixed upon for the operation, this room must be heated up to at least 70°. After the operation your patient may occupy whichever of these two rooms she prefers.

Not more than two assistants—viz., yourself and another physician—will be needed, and bearing in mind that the most common cause of danger from this operation is septicemia, let both of you take a soap-bath, put on clean clothing, and avoid seeing on that morning any case of zymotic or of contagious disease. Let these precautions be observed also by those medical friends whom you may invite to see the operation.

The treatment after the operation needs careful attention. Your patient must be made warm with the hot-water bottles, and be kept perfectly quiet. For several days no one should see her but yourself and the nurse. For obstinate vomiting, which comes partly from the ether and partly from the shock, whiskey or chloral, or the wine of pepsin may be given in small doses, frequently repeated. Sips of very hot water, or a tablespoonful every hour of a mixture containing equal parts of lime-water and of cinnamon-water, are also good remedies. If the vomiting is very stubborn, a hypodermic injection of morphia will often allay it; so also will one of atropia. I have seen it yield to frequently-repeated doses of five grains of bismuth, one drop of dilute hydrocyanic acid and three drops of wine of ipecacuanha. Flatus is another very annoying symptom, which, however, can very generally be dispersed by turning the patient on her side and inserting a flexible catheter as high up the rectum as possible. If this fails to relieve it, or the temperature rises simultaneously with its appearance, saline cathartics should be given, aided, if needful, by turpentine enemata. A very safe rule to follow is, to open the bowels whenever wind does not escape per rectum and tympanites begins to show itself.

For the first twenty-four hours after the operation *nothing whatever* should be given to the patient excepting sips of hot water or of hot tea without sugar or milk, and an occasional teaspoonful of old whiskey; but even these should be given sparingly. After that time, tablespoonful doses of milk, of beef-tea, or of barley-water may be given every two hours. This diet must then be gradually increased, and especially if wind begins to escape from the rectum. If, during the first twenty-four hours, nourishment seems indispensable; or if, later on, more nourishment than that given by the mouth is needed, you must resort to nutrient en-

emata of peptonized milk, or of beef-tea with whiskey.

Should the patient be able readily to pass her water into a urinal, it need not be drawn off. Otherwise, it must be drawn off regularly every six hours for the first two or three days. Later than this, the catheter need not be used so frequently, but only when the patient wants it. On the morning of the third or the fourth day, even earlier if tympanites appears, the bowels must be opened, preferably with saline cathartics, and thereafter they are to be moved every other day. The cathartics which I prefer are teaspoonful doses of Rochelle salts every hour, or a Seidlitz powder every two hours.

No anodyne whatever need be given, unless called for by great pain, or by excessive restlessness. Should the body-heat indicate a temperature of 101° or over, an ice-cap or a bladder filled with ice should be kept on the head of the patient as long as it does not chill her, and it feels comfortable. Peritonitis, or other septic symptoms, must be treated with ice to the pit of the stomach in addition to that on the head, and with brisk saline cathartics followed by large doses of quinia, and by morphia enough to allay the pain.

If a drainage-tube has been put in, it is to be sucked out dry every two, three or four hours, by means of a small syringe to the nozzle of which a short piece of rubber-tubing has been attached. Every time this is done, a fresh piece of sublimated cotton is to be placed over its mouth. Twice a day should the drainage-tube be lifted up half an inch, and turned wholly around on its axis. Unless this is done fringes of the omentum, or shoots of organizing lymph may get into the tube-holes, and by swelling up inside of the tube, prevent it from being withdrawn without great and dangerous violence. The drainage-tube is to be removed whenever the fluid withdrawn from it becomes clear and straw-colored like serum. The opening left in the wound must be dusted with iodoform and covered with sublimated cotton or gauze.

The dressing, being antiseptic, need not usually be changed until a week has passed. Every stitch may then be removed, and the wound may be washed with a 1:2,000 mercuric solution, dusted with iodoform and supported with long and narrow strips of rubber plaster. Over this some sublimated cotton or gauze should be placed, and over all a clean binder. For fear of a weak cicatrix and the formation of a hernia at the site of the wound, the patient should not get out of bed for at least two weeks, and should for six months more wear some kind of gored binder, or an abdominal supporter like "The London Supporter."

If the foregoing directions do not cover every point or do not meet every contingency that may arise, do not hesitate to consult me by letter or by telegraph as often as you may wish.

LAPAROTOMY IN INTESTINAL OBSTRUCTION.—REPORT OF A CASE.[1]

BY ALEX. McALISTER, M. D.,
CAMDEN, N. J.

The time for operation in cases of intestinal obstruction is when the diagnosis is made, and before complications and structural lesions have taken place in adjacent and remote organs, and when the patient is in the best possible condition for operation. Surgery has made rapid strides, and in no special field has there been more advance than in intestinal surgery. The mortality from delay, incorrect diagnosis, timidity, ignorance and prejudice in the past has been very high. We have a safe and reliable, speedy and accurate method of diagnosis of intestinal obstruction, namely, Senn's hydrogen gas inflation of the intestines. Senn deserves much praise for his inventive genius, originality and experimental research in intestinal surgery. Keith, in speaking of the failures in abdominal surgery and hindrances to its progress, states that most of the injury has been done by the surgeon himself. Time waits for no surgeon. Delays are dangerous. Formerly, the phrase, "obstructed bowels" was synonymous with death. To-day it means: use the test, operate, remove the cause and let the patient live. When done early by expert surgeons, and before structural lesions have formed, laparotomy for intestinal obstruction will have as small a mortality as ovariotomy. The physician of the present and future, who is not equipped to make the special diagnosis of obstruction, operate for the removal, or have a surgeon operate, and before serious tissue lesions have taken place, is most certainly highly culpable and derelict of duty.

[1] Read before the Camden County Medical Society, February, 1891.

The best time to operate is when the diagnosis is made, and made early. Wyeth states: "Do not wait longer than the lesion of intussusception is recognized. Within the first twenty-four hours the prognosis will be more favorable, and the danger of a fatal termination will be increased with each day thereafter." If volvulus is not removed within a few hours by other treatment, abdominal section should be performed, the hand should be introduced and the loop should be untwisted. Constriction by bands, the vermiform appendix, the pedicle of an ovarian or uterine tumor, the Fallopian tube, diverticula, strangulation through slits in the omentum and mesentery and adhesions between the contiguous loops of intestines, demand early operative interference, as do all other forms of intestinal obstruction. That taxis should not be done longer than five or ten minutes at any one effort. It may be repeated at intervals of half or one hour, within the first six hours of the history of strangulation. After twelve hours, it should not be practiced. The majority of cases which end fatally are those in which strangulation has existed twelve or twenty-four hours or more before surgical interference. Abdominal section under asepsis and antisepsis in a patient not exhausted by suffering or disease, is almost free from danger, when done early by a surgeon skilled in the technique of intestinal and abdominal surgery.

Scientifically practiced massage and taxis have a limited range of application in the treatment of intestinal obstruction. They are applicable to cases of obstruction due to a foreign body, an enterolith or fecal accumulations, and should be resorted to only before inflammatory changes have developed at the seat of obstruction, and while the patient is under anæsthesia. The rule now is not to wait hours, or a day, to do taxis, but to do it only for fifteen minutes, and never over thirty.

Senn states: "True intestinal obstruction, whatever its cause may be, is as strictly a surgical affection as strangulated hernia, and remediable only by the same kind of surgical treatment." To let a patient die of the consequences of a removable cause of obstruction, without an operation, is a reflection upon the advances of modern aggressive surgery. In doing an abdominal section for obstruction, the aim of the surgeon should be to save life, to operate quickly, safely and cautiously, and not to do an ideal operation, but to economize time, minimize shock, lessen the stage of anæsthesia, prevent unnecessary extrusion of the bowels, and protect them with hot aseptic towels; to irrigate with hot aseptic water, and prevent complications, making all the details of the operation aseptic from beginning to end.

The technique of this operation has been much simplified by Senn's intestinal anastomosis, lateral apposition, lateral implantation and intestinal exclusion, and Senn's modification of Joberts' operation by circular enterorrhaphy, will greatly lessen the mortality of intestinal obstruction in the future.

On July 14, 1890, I was called in consultation by Dr. Kensinger, to see J. S., thirty years old, born in Poland, by occupation a painter. He had been suffering with symptoms of obstruction for about four days. His abdomen was distended and tympanitic, and there was some dulness in the right flank. His extremities were flexed; and his expression anxious. He had fecal vomiting and great and frequent abdominal pain, referred to the umbilicus. His pulse was 130; his temperature 102⅘°; his respirations 30.

I urged immediate operation, which was readily assented to by the patient and his relations. I operated, being assisted by Drs. Kensinger and Sherk. The patient was etherized, an incision five inches long was made in the linea alba, between the umbilicus and the pubes. Several loops of intestine presented, which were immediately covered with towels wrung out of hot water. Passing my hand into the cavity, after careful examination, I found a loop of ileum about eight inches long, about two inches below the umbilicus, twisted upon itself from left to right. The omentum was pushed firmly against it, and the part of the intestine where the twist existed was very dark in color, and looked gangrenous. I also found small spots throughout the small intestine which also looked gangrenous, and the intestines were congested looking, and very much distended with gas, which escaped by the rectum, after the twist was released.

Irrigation was copious and thorough, and some water was left in the cavity. No drainage was used. The incision was closed with silk. The duration of the operation was about a half-hour. An antiseptic dressing was applied, and the patient was

placed in bed. Very little shock followed the operation, and no vomiting. Reaction was rapid. The bowels were freely moved. In less than an hour after the operation the patient was given drachm doses of sulphate of magnesia, every two hours, and by the next morning he had passed a house-bucketful of feces. His temperature was 100°. After this convalescence was uneventful.

Two weeks from the time of the operation he was back at his trade, and he has been perfectly well up to date.

ARTERIO-CAPILLARY FIBROSIS.[1]

BY AUGUSTUS A. ESHNER, M. D.,
PHILADELPHIA.

Every cell inherits from its parent cell a certain lease of life, at the end of which physiological death occurs. This period, however, may be influenced by external conditions. Premature death is pathological. We cannot recognize a pathological longevity. Similar laws apply to the human individual, the composite of a vast aggregation of cells of widely differentiated function.

The life of man may be divided into three periods: that of evolution, of growth, of development; that of maturity, of perfection; and that of involution, of decline. The first begins with birth, the last ends with death.

During the period of growth and development, tissue-change and destruction—catabolism—are more than offset by tissue-construction and repair—anabolism. Nutrition exceeds waste. Building-up is more active than tearing-down. With the activity of life comes the demand for the highest differentiation of function of which the organism is capable. This represents the perfect individual. For a time, a condition of equilibrium is maintained. Sooner or later, however, the tide begins to turn. The equilibrium is disturbed. Waste exceeds repair. The cellular assimilative function becomes impaired, the constitution of the nutritive fluids defective. Tissues and organs are imperfectly furnished with the materials for their maintenance. Vascular changes occur. In a vicious circle, one baneful influence reacts upon another. The entire organism is reduced to a condition of deterioration. Finally, the state of nutrition falls to so low a level as to be insufficient for the purposes of life, and functional activity comes to a standstill. This is the physiological process, as it occurs at advanced age, and constitutes the condition of senility. Occurring at an earlier period, however, the process becomes pathological, recognized clinically by signs and symptoms which may be conveniently included in the designation premature senility.

As the component parts of the organism depend for their sustenance upon the nutritive elements of the blood, so will their functional stability be governed by the quality and quantity of the circulating medium. Thus, we would be led to look to the blood as containing the excitant which induces the earliest changes. The function of the cell once impaired, the deleterious action of the blood would be augmented by the retention of matters which it was the part of the cell to remove, and the addition of products from the degeneration of the cell.

Pathologically, the condition under discussion may be considered a general fibrous substitution and hyperplasia, displacing parenchymatous structures and narrowing the lumen of arteries and capillaries; hence the names arterio-capillary fibrosis, arteriosclerosis.

The histological changes may arise in one of two ways, or in a combination of both. When tissue degenerates or is destroyed, nature endeavors to make restoration. The attempt is often only partially successful. The newly-formed tissue is apt to be of a lower grade than that which it replaces. The more highly organized the latter, the wider, of course, is the variance. In this way, fibrous tissue takes the place of vital structure. This is illustrated in the cicatrix, be it cerebral or cutaneous or parenchymatous. Under other circumstances, there occurs a primary hyperplasia of pre-existing connective-tissue, perhaps of a subacute or slowly chronic character, displacing the tissue proper to the organ, and finally leading to its disorganization. These two processes may be illustrated by the modern pathological conceptions of the changes that occur in certain diseases of the central nervous system. In the acute inflammatory disease known as anterior poliomyelitis, the destruction of the ganglion cells in the anterior horns of the gray matter of the spinal cord

[1] Read before the Philadelphia County Medical Society, March 11, 1891.

is followed by a reparative process, in which fibrous tissue replaces that which has been destroyed. In the systemic scleroses, posterior and lateral; in the degenerations, ascending and descending, primary destruction of axis-cylinders takes place, with secondary substitution of fibrous tissue. In insular sclerosis, on the other hand, there is at first an increase in the connective-tissue, followed by gradual destruction of nerve-elements and interruption of function. The difference is that between inflammation and cirrhosis. Solid viscera may be unchanged in size. They are rarely enlarged, but often shrunken, from contraction of the fibrous elements. The coats of the vessels are thickened, and their lumen narrowed. In whatever structure the process begins, it is slowly progressive, especially if the exciting influence be maintained. The change, as it affects the arteries, is to be distinguished from atheroma, with which it may be associated. Both are evidences of senile disorganization. In atheroma, however, the process is one of fatty degeneration of the intima, giving rise to ulceration, which is in turn followed by cicatrization and calcification. In the one condition, clinically, the vessel, to the eye and to the examining finger, is tortuous and resistant; in the other, it is rigid and unyielding, like a pipe-stem. It is the difference between fibrous and calcareous infiltration.

The etiological elements concerned in the production of arterio-capillary fibrosis are comprised in the group of noxæ which we now know as toxic and infectious, and include syphilis, alcoholism, lead-poisoning, gout, rheumatism and infectious diseases in general. Heredity, too, probably plays some part in transmitting a predisposition to the occurrence of fibrous degeneration.

Perhaps the most conspicuous symptom, and that for which the patient first seeks relief, is shortness of breath on the slightest exertion. The onset of this condition is so insidious that the patient is unaware of its existence, until it is suddenly revealed by a demand for some special activity. With it is often associated palpitation, which the patient is apt to describe as a fluttering of the heart. The cardiac action is found to be irregular, perhaps intermittent, with occasional duplication of the second sound or an abortive first. The second sound is distinctly accentuated at the base. The pulse is tense and resistant. The temporal arteries are prominent and tortuous. In addition, the patient complains of coldness of the extremities or of numbness or of formication, with, perhaps, some weakness. There may be vertigo, especially on sudden changes of posture, lightness in the head, as the patient says. The memory is impaired, and there may be headache. The knee-jerk is frequently exaggerated, but not always. Often there is tremor, and sometimes nystagmus. In some cases, the complexus of symptoms approaches that seen in insular sclerosis, in others that seen in paralysis agitans, though typical of neither. It may be that such cases represent incipient stages of the one or the other of these affections, which, in their turn, perhaps, may be more intimately related than we as yet know. Occasionally, we meet with transient paresis and local paralysis, sometimes ascribed to uremia. It seems easier to explain the occurrence of these on the assumption of partial vascular occlusion. The feet are sometimes swollen. There is apt to be increased frequency of micturition of a urine of low specific gravity, but rarely containing albumin or casts.

The train of symptoms here outlined may be readily explained by the pathological lesion. How common it is at autopsies to find organs the vessels of which gape with open mouths, while, during life, the only condition determinable was such an association of symptoms. It is neither nephritis nor arteritis, neither myocarditis nor cerebritis, but a diffuse fibroid change, the manifestations of which are perhaps most patent in the small arteries. Thus, we see associated with this condition miliary aneurisms in the brain, which we now know to be so generally antecedent to cerebral hemorrhage. In the absence of aneurism, the vascular fibrosis may alone act as a predisposing cause of rupture. The narrowing of the cerebral capillaries may become so marked as to permit of the formation of thrombi *in situ*, thus explaining certain cases of hemiplegia in which cardiac lesion or other source of embolism cannot be detected. It is also probably in the thickening of the wall of the capillary and the narrowing of its lumen that certain cases of transient or permanent loss of power, in which the severity of the symptoms soon abates, may find explanation. The derangement of cardiac function is a result of defective nutrition and innervation. The shortness of breath is brought about by the cardiac incompetency, by the vascular changes in the pulmonary structures, and, finally, by lowered

innervation, in some cases aided by concurrent emphysema. Other visceral symptoms are due to changes of a similar nature in the respective organs. The extremities are cold because the blood-supply through the narrowed vessels is imperfect.

In the consideration of the treatment of this condition, not much need be said in the way of prophylaxis. "All the medicines in the world will not replace right living." It is the secret of longevity.

In the general management of the case, the individual is to be directed to lead a tranquil life, to avoid excitement and undue physical exertion, to partake of a light, nutritious diet, which, with benefit, may include a liberal supply of milk, and to take an occasional saline laxative.

Of medicaments, I have personally had the most gratifying results from the administration of nitro-glycerin, in combination with digitalis when the cardiac action is feeble or its rhythm disturbed. Nitro-glycerin is a diffusible stimulant, causing dilatation of the peripheral capillaries, thus permitting a flushing of the tissues with arterial blood, and promoting nutrition. By diminishing the resistance in the vessels, the demands upon the heart are lessened, while this organ, being better nourished, is more competent to carry on its functions. Beginning with one minim of a one-per-cent. solution three times a day, the dose is progressively increased one minim every second day, until physiological effects—flushing of the face, sensation of a band around the forehead, headache and dizziness—are observed. Probably the most appropriate menstruum is spirits of nitrous ether, the action of which, as a nitrate, is synergistic. In administering digitalis, I like to prescribe two to five minims of the tincture in two drachms of the infusion, in this way obtaining the benefit of all the principles of the crude drug soluble in alcohol and in water.

Strychnine and atropine may prove useful adjuvants in the treatment. Under certain circumstances, it may be desirable to substitute strophanthus for digitalis. Caffeine or cocaine may fulfil certain indications. Cod-liver oil might be used as a nutrient, alcohol as a stimulant. Iodide of potassium is of doubtful utility, except during the active stage of syphilis.

The conclusions I wish to record are: That there is a pathological condition in which the manifestations of senility occur prematurely, and that the best means of combatting it is by improving the general nutrition and giving tone and stability to the cardio-vascular apparatus—a healthy nutritive fluid, with a competent distributing apparatus.

PERISCOPE.

Use and Abuse of Drainage in Surgery.

In the *Medical Record*, March 14, 1891, Dr. James E. Moore, Professor of Orthopedic Surgery in the University of Minnesota, says: The besetting sin of our profession is our tendency to go to extremes. We discover something the judicious use of which would be of untold value to the human race, and are not content with its proper use, but must needs overuse it until its use becomes an abuse, when a reaction sets in and abuse is many times followed by disuse. In the matter of drainage of wounds we are still in the stage of abuse. Reaction has already set in, and inasmuch as proper drainage is such a vital part of surgery, it is our duty to study the subject carefully and not allow disuse to follow abuse. This reaction first began in abdominal surgery, and already we have learned that in a certain class of cases in which we at one time thought drainage an essential, we get the largest percentage of recoveries without drainage. Laparotomists have pretty nearly arrived at the truth, viz., that septic cases and doubtful cases should be drained, and that aseptic cases are better without drainage. I fear that in this important branch of surgery the reaction has a tendency to go too far, and that certain cases are left without drainage that would be better with it. We can also see some reaction in amputation wounds, where, instead of the sewer pipes of former days, we use drainage-tubes of smaller size, or none at all.

We, as members of the grandest profession on earth, have weighty responsibilities, and are held strictly accountable for our deeds and misdeeds, but, being only human beings, are entitled to the privilege of changing our views with increase of knowledge. In fact this is the only way we can advance. The very fact that our responsibilities are such weighty ones should remind us that we should guard against our besetting sin and avoid extremes. This can only be done by refusing to accept the *ipse dixit* of any man, no matter how exalted his

position may be, and by basing our change of views upon facts, instead of following in each other's wake like a flock of sheep.

The thorough drainage of wounds has been considered of primary importance for many years, but when Chassaignac suggested the use of drainage-tubes in 1855 his reason for draining was very different from that of the surgeon of 1890. He drained to allow of the free escape of pus. We drain in recent wounds to prevent the formation of pus. The necessity for drainage in an infected or suppurating wound is universally understood. The more perfect the surgeon becomes in his antiseptic methods the less he needs drainage-tubes and their various substitutes, and when he arrives at that stage of perfection in his methods that insures him an aseptic wound every time he operates he can dispense with them altogether. In all recent works on surgery we are advised to use drainage-tubes to carry off the excessive discharges from a wound, but we are not advised to make an opening at the seat of a fracture to carry off the discharges. Those who first learned of the value of drainage in open suppurating wounds, also learned that Nature took care of the discharges from a subcutaneous wound. When we have so perfected our methods of wound-dressing that we can place an open wound in the same condition as a subcutaneous wound we will no more think of draining in one any more than in the other. If a wound is aseptic Nature will take care of the discharges, just as she does in a subcutaneous wound. In a simple fracture of the femur there is much greater effusion of blood and serum than in any operation wound, and we never think of draining it off. Nature takes care of it promptly, the only disturbance being a transient rise of temperature.

Twenty-five years ago surgeons drained to carry off the pus. Fifteen years ago they drained to carry off the discharges so that they would not putrefy. At the present time we drain largely from force of habit. We no longer believe in spontaneous generation, or that the discharges putrefy without first having been infected from without. Blood in an aseptic wound becomes partly absorbed and partly organized. Serum should not be looked upon as something to be gotten rid of, for it undoubtedly has an important function to perform in the reparative process. In certain cases that we are learning more about every day, viz., infected cases, we must always drain. I maintain, however, that in aseptic cases drainage by means of rubber or other open tubes is not only useless but adds an element of danger. We learned the value of drainage when septic surgery was practiced, and notwithstanding the fact that our reasons for drainage have undergone very radical changes, we have been using drainage-tubes, too, nearly like we did at first. The principal difference is, that we originally allowed the drainage-tubes to protrude through the dressings, thereby infecting every wound. We are now very careful to cover the ends of the tubes and to allow everything to pass out, and nothing to pass in through them, which is an exceedingly difficult matter. Aside from the fact that a drainage-tube is a foreign body and interferes with primary union, the one great danger is that it keeps an entrance-way open through which germs may enter and infect the wound.

It is customary to close small wounds in all parts of the body without drainage with very satisfactory results. I can see no reason why a large wound should require drainage any more than a small one, for the amount of absorbing surface bears the same proportion to the discharges in the one as in the other. I believe we have allowed the size of the wound to influence us too much when deciding whether to drain or not. The character and not the size of the wound should decide the question. I fear that we have fallen into the habit of draining every wound without thinking whether it is necessary to drain or not.

I was first led to question the propriety of draining every large wound by the annoyance occasioned by rubber drainage-tubes after operations upon tubercular joints. I found that the sinus caused by the drainage-tube almost invariably became infected and prolonged the case unnecessarily. Although I still drain in cases of this kind when there is a possibility that I may have overlooked some focus of disease, I never use rubber rubes, but use strips of iodoform gauze. In excision of the knee-joint my happiest results have been in cases where I have omitted drainage altogether, or have used a few strands of catgut. I get more satisfactory results after amputations, after operations upon breast and axilla, and, in fact, in all clean-cut wounds, without drainage than with it. No one prizes drainage more highly than I in proper cases, but it is not necessary in an aseptic wound. Those who do not work antiseptically must always

drain, because blood and serum when not protected from germs will surely putrefy in a wound, where all the necessary auxiliaries are found. The most zealous advocates of drainage are those who denounce antiseptic surgery.

It would be amusing were it not such a serious matter to see how zealous a dirty surgeon is in the matter of drainage. He usually carries his rubber tubing in the bottom of his satchel, after taking it from a dusty drawer in his office, and if he has not infected his wound earlier in the operation, always does so when he introduces his tubes.

When carbolic acid was so extensively used drainage was always necessary, on account of the excessive discharge caused by the acid. Lister, in his address before the last International Medical Congress, said that it would be a grand thing if we could do away with drainage altogether, and cited an instance in which he uses but one tube of moderate caliber, where he formerly used four of various dimensions. He speaks of the time when we shall have found drainage no longer necessary as the fulfilment of his early dream. If this great benefactor lives out his expectancy, I feel certain that he will see this day. The enemies of antiseptic surgery point to these advances of Mr. Lister's as evidence of its decay. But every fair-minded man knows that there has been no change of principles.

With all its perfections antiseptic surgery is far from being perfect yet, and many changes of detail are necessary, but these changes instead of being evidences of decay are certainly advances.

As Mr. Lister suggests, these advances are all in the direction of the hermetic sealing of wounds, and this is certainly the ideal method, as it is Nature's method. The hermetic sealing of wounds has been faithfully tried in the past, but the trial was made at a time when the principle of wound infection was undiscovered, and it was necessarily a failure.

Mr. Tait, in his criticism of Mr. Lister's address, claims everything for drainage. He says that when all decomposable material is removed by drainage, germs may be admitted freely. He states that the exclusion of germs is an impossibility, but does not seem to understand that perfect drainage is also an impossibility.

Prof. Erichsen, in some recent remarks upon this controversy, has certainly sounded the key-note when he cites the fact that two elements are necessary for putrefaction in wounds, viz., putrescible material and infective germs, and says that the disputants accomplish the same end by different means: Mr. Tait by removing the pabulum, and Mr. Lister by filtration of air and by germicides. He very wisely asks: "Is it wise to be exclusive in the employment of one or the other of these methods?"

I am certain that many wounds have been infected through the drainage-tubes because it was impossible to keep the ends of the tubes covered by the dressings. I have found it very difficult to keep the dressings close to the wound after radical operation for hernia, and have gotten much better results since I began to apply small strips of iodoform gauze with collodion.

In some operations upon bone and in Phelps's operation for club-foot, special effort is made to secure a blood-clot in the wound, in order that it may become organized. Ordinarily, however, it is important to stop all hemorrhage before closing a wound that we do not wish to drain.

Hematemesis in Gastric Ulcer.

In a very interesting paper on gastric ulcer—part of which is published in the *Medical Chronicle*, February, 1891, Dr. Dreschfeld, of Manchester, England, says hematemesis is one of the cardinal symptoms, and occurs in about one-third of all the cases. It may occasionally be one of the first symptoms, and it does not so rarely happen, especially in elderly patients, that hematemesis comes on in apparently good health. He has seen three such cases within the last eighteen months. In these cases large quantities of blood are vomited, sometimes even clots, and melena soon follows. In cancer of the stomach hematemesis is, he believes, never the first symptom, and if in cases of doubtless cancer, the history shows that hematemesis was one of the first symptoms, we may, he thinks, assume that we have to do with cancer implanted on an ulcer. This was seen in two cases under his care in the Infirmary, and in one case under the care of his colleague, Dr. Leech, as revealed by the *post-mortem* in these cases. In cirrhosis of the liver, and other diseases causing obstruction to the portal circulation, hematemesis may be the first or a very early symptom of the disease; but the history of the case, the presence of symptoms point-

ing to alcoholism, and the appearance of the blood, which is quite liquid and dark colored, help one in the diagnosis. Moreover, as the blood in these cases is venous, the hematemesis is rarely followed by intense anemia, and symptoms of depression. The hematemesis in these cases acts more like a venesection, and the patient after the attack often feels easier than before. The hematemesis in hysteria occurs chiefly in the morning; is, as a rule, small in quantity; and is, as we know, often due to various artifices which the patient has recourse to. This is, however, not as often the case as is generally supposed; and as spontaneous hemorrhages do occur in hysteria, there can be no doubt that in some cases the blood is really derived from the stomach. The presence of other symptoms of hysteria, such as hemi-anæsthesia, globus hystericus, hysterogenic zones, contraction of the field of vision, and so on, are important aids in the differential diagnosis. Such rare cases of hematemesis as those due to the bursting of an aneurism into the œsophagus (the bursting of an aneurism into the stomach is extremely rare) are quickly fatal, whilst hematemesis from an ulcer is after all rarely followed by death.

When hematemesis is not the first symptom, but occurs, as it often does, only during the course of the disease, then the other symptoms of ulcer such as localized pain and vomiting, precede it, and the diagnosis is not difficult.

The vomited matter in hematemesis from gastric ulcer has occasionally the character of "coffee-ground vomit," which is generally looked upon as characteristic of cancer of the stomach. This occurs at a late period of the disease, and is due to a slow and gradual extension of the ulcer, whereby only minute blood-vessels become eroded, and the small amount of blood altered by the gastric juice assumes this peculiar appearance. The vomit is by itself not to be distinguished from that of cancer, but the other symptoms present help to distinguish the one disease from the other.

Profuse hematemesis in gastric ulcer occurs more especially when the ulcer is situated at the pyloric end of the stomach, and more on the posterior than the anterior surface; this is due to the arrangement of the blood-vessels. From this follows two important considerations: First, when in gastric ulcer we get profuse hematemesis, we have, after a time, from the cicatrization of the ulcer, contraction of the pylorus, giving rise to symptoms of dilatation of the stomach. Second, the ulcer gradually extending in depth causes, from its position on the posterior wall, adhesion between the stomach and pancreas, and perforation of the ulcer in these cases is not likely to happen. It is different when the ulcer is situated on the anterior wall, the extension of the tumor in depth is not likely to lead to any adhesions, for the constant movement of the abdominal walls would hinder any such adhesions to form, and hence the frequent perforation of such ulcers; the same holds good if the ulcer extends towards the lower curvature. We can thus understand that perforation is more apt to occur in those cases where there is no hematemesis, or only slight hematemesis, and where symptoms of pyloric constriction are absent.

Open Operation for Strangulated Hernia.

Dr. Benjamin T. Shimwell, in the *Medical News*, March 14, 1891, says:

The classical operation for strangulated inguinal hernia has only partly met the requirements. The advance made in surgery, more especially in that of the abdomen, has allowed a greater liberty of action, which seems not to have been properly taken advantage of in the treatment of this condition. This paper is written to show the advantage gained by the open method of operating—that is, cutting directly through all the tissues of the tumor, including the external ring, internal ring and, if necessary, the abdominal wall, converting a simple herniotomy into a hernio-laparotomy. The condition of the protruding gut is modified by its pre-existing condition, the size of the protrusion, the length of time of strangulation and the position of the constriction. An old incarcerated hernia with a sudden increase of the protrusion and consequent constriction gives an abnormality in relation of structures and their component characters, that has no resemblance to an acute case and causes a difference in the ultimate results of treatment. The size of the protrusion is not so much a factor in causing constitutional symptoms as is supposed. I have seen as violent symptoms in a small protrusion as in one of greater size.

The length of time of constriction also modifies structural capacities, and directly influences the result. The point of constriction may be at either the external or in-

ternal opening, or, what is often overlooked, the true constriction may be the neck of the peritoneal sac, the inguinal rings acting merely as a barrier to the return of the gut and not as a true constrictor.

A careful consideration of these propositions opens a field of thought that must of necessity show the inefficiency of the nicking of the external ring from below. The extension of the incision cannot be said to complicate matters by increasing the risks. It is settled beyond peradventure, that careful increase of a few inches in the length of an incision, whether in the abdomen or anywhere else, does not increase the risks.

Compare the old method with the certainty of work and view of field, the definite knowledge of conditions of the injured gut, and the lessening of risks which were due to handling of gut by the drawing down preparatory to reduction. Would an abdominal surgeon operate in a case with marked adhesions through an opening of the same size that he would in a simple uncomplicated oöphorectomy? Working in the dark is prolific of bad results. It is not in the power of any man who operates for strangulated hernia by the old method to tell with certainty the condition of the bowel, and thus it is that many cases end in death by inflammation of, or ulceration and necrosis of the bowel at the point of constriction. The condition of the congested bowel is the point always to be regarded in determining whether it will regain its normal state. To me it seems that not enough importance is laid upon the condition of the tissue at the point of constriction. There is often an amount of injury done that causes the most serious results. There is the question of necrosis, which is one of importance, and then also the loss of nerve vitality by constant constriction, which is often marked. I have seen this persistent at the end of days, the obstruction still remaining.

Paralysis of a portion of the bowel prevents fecal circulation; the bowel forces its contents to this point, and then is unable to send them further. Gas and fecal matter will enter a paralyzed portion. Continuous action is a necessity. As a proof of this point, a patient upon whom I had performed hysterectomy died suddenly from tympany produced by obstruction of the bowels due to paralysis. The case was one in which every means were tried to relieve the condition. The *post-mortem* examination disclosed the point of paralysis in the lower portion of the ileum. The bowel walls were flaccid at this position for about two inches. Above this the whole canal was enormously distended, while below to the anus it was entirely empty. Experiments on dogs have shown the same results.

It is in the ability to appreciate these conditions properly that the open incision has its strongest advantages. A full inspection of the injured bowel indicates the treatment where special conditions arise, as does the question of resection when gangrene is imminent, or in those cases in which it is apparent that the point of constriction will not regain its tone. The importance of resection in the latter cases has been impressed upon me by the condition of those that I have seen. This loss of tone is apt to be present in old incarcerated hernias, in which narrowing of the canal by pressure has altered the structure of the walls, and in such cases the increased constriction has injured an already impoverished part. Another advantage is the certainty of the complete return of the protruded gut into the abdomen.

The possibility of a radical cure is to be considered. I have one case that I operated on nearly two years ago, which seems to approach a radical cure. This was a case of true hernio-laparotomy. The internal ring was carefully sewn together, the floor of the inguinal canal was curetted and closed by buried sutures which included the external ring, the superficial surfaces continuous with the abdominal wall being brought together with silkworm-gut. The abdominal cavity was cut off at once and coaptation was so perfect that it tolerated the patient's tearing off all his dressings, walking down stairs and sitting on the front steps in the early morning of the fourth day. When I last saw him he was doing active work and was not wearing a truss.

The closing of the canal can be done, if so desired, by retention of the sac in the upper portion of the canal, using any of the methods suggested. In old incarcerated cases the adherent sac can be separated from the surrounding tissues, leaving a good surface for union, while the sac can still be retained at the internal ring, its serous surfaces simply in contact, or by the purse-string method. The open treatment, the value of which is still doubtful, can be tried. If the abdominal walls have been divided, care must be exercised to bring into apposition the peritoneum and transversalis fascia, also the superficial fascias that make Pou-

part's ligament. The latter procedure is a necessity for strength, the sutures entering well into the pubic side to hold the divided ligament firmly together. If this is well done, when union has taken place the ligament can be readily defined and its relations are found to be continuous. Drainage of the pelvis is a necessity if exudation is apt to occur.

Extracts from Tubercule Cultures.

In a paper read at the Boston Society of Medical Sciences, January 27, 1891, and published in the *Boston Medical and Surgical Journal*, February 19, Dr. J. A. Jeffries says: I thought it might be of interest to report a few of my results with extracts of pure cultures of the tubercle bucillus. I began a year ago to make extracts and study their effects on guinea-pigs, my ultimate object being to produce immunity or find some form of treatment. At first I used alcohol (absolute and dilute), ether, chloroform and benzole, and found that my results were very variable, not regular. After this, in the early part of last summer, I began to prepare glycerine extracts, reasoning from the power of glycerine pepsin extracts. With glycerine I soon found that more or less definite reactions could be produced by large doses in healthy guinea-pigs. There would be swelling at the point of injection, evident discomfort, an increase of urine and at times fever, etc.

Owing to sickness in my family nothing more was done until after Professor Koch's first publication. I at once found that my glycerine extracts produced a much more marked effect in tuberculous than in healthy guinea-pigs. The former, after a dose of half a cubic centigram, would in the course of a few hours become very sick, huddle up in a corner with hair on end, shiver, and in some cases pant. Apparently the amount of urine was increased. Tuberculous guinea-pigs, while in the reaction, could be laid down anywhere and did not run away.

All my animals, both those inoculated with the extract alone and those first poisoned with pure cultures of the tubercle bacillus were then put under like conditions to note results as to longevity. Unfortunately a bull-terrier made a raid on my guinea-pigs during the latter part of December, and again on the 8th of January, killed most of my control animals, and thus ruined the experiments as to final results. So that all I can affirm is that some of my glycerine extracts of about forty-five per cent. final strength, allowed to stand at a temperature of 37½° C. for one week, contain a substance which causes a much more marked reaction in tuberculous than in healthy guinea-pigs; and that for two or three weeks after, the former appeared better than the simply tuberculous control animals.

I have not, of course, got far enough to say if such an extract will invariably work, or to what extent it will mitigate the action of the bacilli. Nor do I yet know how old a culture would be the best medium to grow it on, nor if the extract should be made neutral or slightly acidified. I might add that I found no signs of tuberculosis in a guinea-pig which had received one and a half cubic centigram of my extract in divided doses, and was then inoculated with tubercle culture in the abdomen. Too much weight cannot be laid on this, however, as the animal was very badly crushed by the dog eighteen days later—other guinea-pigs inoculated in the same way with cultures died of tuberculosis in about a month.

In closing, I would state that this is only read in view of Professor Koch's latest announcement as printed in the newspapers of January 15, from which I should judge that, working in somewhat the same line and stimulated by his first article, I have got something on the same principle, but am not sure, as I have been unable to procure an atom of the paratoloid for any purpose.

Vaccination in France.

The London Medical Recorder, February 20, 1891, says: The French Academy of Medicine is just now the scene of a struggle between those who are in favor of a law making vaccination compulsory, and the others who think that the present permissive system goes as far as is consistent with personal liberty. The general in command of the "volunteers," that is to say, of those who object to compulsory protection, is no less an authority than Professor Léon Le Fort, and last week he made a vigorous rally from behind his entrenchments, and, with heavy artillery in the shape of arguments, he prevented the further advance of the attacking forces. There are several points in Professor Le Fort's address which merit attention, especially as the matter is at

present under consideration in this country. First of all—and the news will come as a surprise to those who have been in the habit of regarding France as being at the prow of civilization—all statistics based on the mortality-returns, from the different diseases, must be incomplete, and therefore misleading, for the cause of death is only recorded for statistical purposes in the more important French towns, and, presumably, not at all in the rural and smaller urban districts. What the total annual mortality from small-pox in France may be, can, therefore, only be matter of conjecture. Still, the Professor admits that it is certainly higher than it ought to be or need be. Another fact, hardly to the credit of French provincial authorities, is, that nowhere outside Paris is any attempt made to isolate the sufferers from small-pox. He is therefore compelled to fall back upon the Paris returns, and these show that the mortality has been steadily diminishing, from 32 per 100,000 inhabitants, during the period 1865-76; 55 per 100,000 in 1880-7; to 5 per 100,000 in 1889. The returns of the Small-pox Hospital at Aubervilliers testify to the same diminution, the admissions and deaths having been as follows:—

1887 . .	1,400	admissions . .	215 deaths.
1888 . .	1,079	" . .	152 "
1889 . .	706	" . .	63 "
1890 . .	363	" . .	37 "

There are no available means of ascertaining the proportion of cases of small-pox per 100,000 inhabitants in the country; still less the proportion of deaths to cases of infection. We are, however, told that country doctors have the greatest difficulty in procuring lymph and the people have the greatest difficulty in getting vaccinated, even supposing they were so disposed.

Let us compare these figures with the German statistics. It must be borne in mind that vaccination has been compulsory throughout Germany since 1835, and in some parts since 1815. The returns are as follows:—

In 1834 . .	54	deaths per	100,000 inhabitants.
" 1836 . .	19	"	"
" 1847 . .	9	"	"
" 1856 . .	7	"	"

In 1865, the war led to a relaxation of the stringent rules in respect of isolation, and forthwith the number of deaths from small-pox jumped up to 46 per 100,000, and in the following year to 62. During the Franco-German war, small-pox was imported into Germany by the returning soldiers, and more particularly by the French prisoners of war, and the mortality from variola in 1871 attained 59,839, and 77,000 in 1872, equal to 233 per 100,000 civilians, and 31 per 100,000 of the military population. In 1874, the vaccination law was consolidated, and a vaccination service founded for the supply of lymph, and by 1877 the number of deaths (810 in 1876) had fallen to 88. This level, however, was not maintained, for in 1882 the figures had again risen to 1,007. Thereupon the German Government enjoined more stringent measures for isolation, and then the downward tendency returned, and in 1886 the number of deaths was 140 only.

In England, the mortality in 1885—a time when vaccination had long been in full swing, but when isolation was not seriously enforced—the number of deaths from small-pox in London alone was 1,419. In 1886 the number fell abruptly to 24, in 1888 to 9, and in 1889 to 1 (!). This diminution coincided with the introduction of isolation on a large scale, which reached its apogee with the law for compulsory notification in 1889.

Professor Le Fort argues from these figures that, though vaccination has an undoubted and valuable influence in affording protection and in mitigating the severity of the disease, the most effective and reliable means of preventing the spread of the disease is rigorously enforced isolation.

While it is impossible to deny the salutary influence of isolation, it seems a trifle inconsistent to object to vaccination as an infringement of the liberty of the subject, while rallying to the principle of compulsory isolation, which is as directly in contravention of personal liberty as any measure well could be. To take a patient, *non volens*, and shut him up for eight long weeks in a hospital, is surely as obvious an attack on his liberty as to insist on his submitting to the trivial operation of vaccination. This question of personal liberty, unfortunately, does not admit of any categorical reply. Different people have different ideas as to what constitutes liberty, and as to what limits, if any, are to be assigned to its play. Still, the great object that we have in view, is to secure cheerful submission to an infliction imposed by reason rather than by law, and if this could be attained by persuasion, instead of coercive legislation, then the choice would be easy.

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The Editor will be glad to get medical news, but it is important that brevity and actual interest shall characterize communications intended for publication.

PRESBYTERIAN HOSPITAL IN PHILADELPHIA.

An event of unusual importance occurred in Philadelphia January 15, when the Presbyterian Hospital of this city celebrated the completion of its new administration building. With this gift of a rich and generous citizen of Philadelphia—and the filling out of a series of gifts, some very large and some smaller—the Hospital has come into the possession of a magnificent series of buildings, fitted with every appliance necessary for a first-class hospital. In many respects, it might be taken as a type of what is best in the development of the Hospital idea in this country; and happily it is only a type of many similar institutions which, bearing the name of some denomination of the Christian Church, extend their charity to all sufferers of every name and every condition.

The benevolence and the beneficence of institutions like the Presbyterian Hospital can hardly be over-estimated. Medical men, more, perhaps, than any others, know how far-reaching is the good done by gifts to such an object. Those who live in cities know especially how great is the difference between what can be obtained by the sick and injured poor in their own houses, and what they get in such a Hospital as this, as well as how much to them it is to be spared the painful alternative of staying at home or going into the Almshouse Hospital, no matter how well that may be managed—as is the one in this city. For this reason, we may be glad that the Presbyterian Hospital in Philadelphia has been so prosperous, and seems likely to be more prosperous and more useful as time goes by.

PATHOGENESIS OF TETANUS.

The immense strides made in the science of bacteriology during the few years of its existence and development are well illustrated in the study of the etiology and pathogeny of tetanus. In 1885, Nicolaier demonstrated that fatal tetanus could be produced in mice, guinea-pigs and rabbits by subcutaneous inoculation with superficial layers of earth, a slender bacillus being found both in the earth and at the site of inoculation. In 1886, Rosenbach found the same bacillus in wounds in man in cases of tetanus as a result of injury or of extreme cold, which reproduced the disease in inoculated guinea-pigs and mice. It was not, however, until 1889 that Kitasato, in the laboratory of Koch, succeeded in isolating and cultivating the bacillus, while but a few weeks ago from the same source emanated an announcement as to the conferring upon guinea-pigs of immunity against tetanus.

Le Bulletin Médical, February 1, 1891, contains a highly interesting paper on the pathogenesis of tetanus, by Drs. Vaillard and Vincent, presented at a meeting of the Académie des Sciences, January 26.

Inoculation of animals with pure living cultures of the bacillus of tetanus is always followed by tetanus, but, contrary to what is observed in men and animals spontaneously infected, the pathogenic agent does not multiply at the site of inoculation in the blood or in the organs of the body. This peculiarity is in apparent contradiction to the prevailing notions concerning diseases of parasitic origin, the evolution of which is correlative of the pullulation of the pathogenic organisms. The explanation lies in the fact that inoculations of cultures of the bacillus of tetanus are active only by the presence of the toxine which they contain. The animals succumb to the intoxication produced by the poison elaborated by the bacilli, and not as a result of the growth and development of the organisms in the tissues. This may be proved in two ways. If a number of animals are inoculated with a living culture, and an equal number with the same dose of the culture sterilized by filtration through porous earth, all die after the same interval. If, on the other hand, a susceptible animal, such as the guinea-pig, be inoculated with even considerable quantities of pure cultures of the bacillus of tetanus, deprived of all traces of toxine, tetanus does not develop. Thus, the bacillus or its spores in a state of purity, without toxine, does not produce tetanus when injected into the tissues of a healthy animal, but the animal dies if inoculated with the products secreted by the wound in a patient having tetanus or contained in tetanigenous earth. These results are not contradictory, but depend on conditions which favor or retard infection.

If an ordinary micro-organism, such as the bacillus prodigiosus, be associated with the spores of the tetanus bacillus, freed from toxine, tetanus can be provoked. Another means, not less certain, is to expose an infected wound to the impurities of the air. This can be demonstrated by introducing beneath the skin a small bit of sterilized cotton, impregnated with some spores, freed from toxine. The wound is soon invaded by adventitious microbes and may suppurate. Fatal tetanus soon supervenes. We have here reproduced the conditions of natural infection. Light is thrown on the part played by the association of micro-organisms in the pathogenesis of tetanus. A new point in the history of diseases of parasitic origin is established.

The activity of the pathogenic germs already known is greatest in their pure state. The primary condition in experimental study, hitherto, has been the perfect isolation of the virus, and its inoculation in a state of absolute purity. This is not the case with tetanus. The pure virus is without effect. Impure, however, it is pathogenic.

The microbe of tetanus is incapable of vegetating in the tissues of a healthy animal, but it pullulates if simultaneously another microbe, which may or may not be pathogenic, is introduced with it. This explains the tetanigenous power of earth, rich in microbes of many species, all of which, however, do not favor the development of the bacilli of tetanus in wounds. Other conditions may facilitate infection. Thus, tetanus may be produced by inoculating an animal even tolerably resistant with a mixture of spores, without toxine, and a solution of lactic acid or a few drops of trimethylamine. The action of certain chemical agents upon the tissues is favorable to the development of the germ, which, without this association, would be inactive. The result is the same if the spores are introduced into a contused muscle. The bacillus of tetanus or its spores does not provoke tetanus in a healthy animal, when injected in a pure state, without toxine, because of the action of certain cellular elements or phagocytes. This may be studied in the anterior chamber of the eye or in the subcutaneous connective tissue. Interference with the protective action of the phagocytes favors infection. Thus, lactic acid repels the afflux of leucocytes, permitting the

spores to vegetate and the bacilli to elaborate their toxine. The bacillus prodigiosus, on the contrary, attracts the leucocytes, engages their activity, diverting it from the tetanus spores, is taken up by them, while the dangerous agents germinate and secrete the fatal poison. In the case of natural infection the phagocytes are able to exert their prophylactic influence only at the beginning of the conflict with the invading microbes. Finally, as the bacilli elaborate their toxine, the phagocytes are overcome.

TRAUMATIC NEUROSES.

In connection with the case of traumatic neurosis published in the REPORTER, March 21, 1891, it is interesting to note that Bitot and Lamarque, residents of the Hospital of Bordeaux, reported, according to *Le Progrès Médical*, February 14, 1891, a case of what they call hysteria in a man, after a fall into the hold of a vessel—a distance of over sixty feet. The attack began with disturbances on the side of the face, which were rather hard to understand, but it developed as glosso-labial hemispasm, or hysteria. He had also habitual stigmata, hemi-anasthesia and contraction of the field of vision. The patient fell upon some casks, which he struck hard with his heel. This was soon followed by hyperesthesia in the heel, which was attributed to hysteria. An interesting feature of the case is the fact that the hysterical manifestations disappeared in a few months, which does not often happen in traumatic hysteria, and that the patient was a person predisposed to manifestations of this kind, having had nervous ancestors, and having, himself, always been an odd and excitable man.

Recent investigations on this subject will probably throw some light upon the strong and only obscurely-understood manifestations of nervous disturbances after railroad accidents, and accidents which simulate railroad accidents in their principal features. Some difficulty in these cases is experienced from the fact that many of the cases have associated with them a moral element, depending upon the possibility of securing damages from corporations in proportion to the real or apparent severity of the consequences of the injury; but those who have studied the subject carefully seem to be practically unanimous that violent physical shocks make some impression upon the nervous part of the human system, which may show itself in very remarkable ways. Dr. Shipps's case in the REPORTER—referred to above—was regarded as one of temporary insanity, and so, no doubt, it was in one sense of the term; but a more careful classification would probably place it with what are now called traumatic neuroses. Many such cases have been reported recently, and when attention is generally attracted to the way in which the subject is now regarded, it is probable that more will be put on record, and that the means for securing a good understanding of the matter will be increased.

EXCISION OF CHANCRES.

The distinct and different individuality of chancre and chancroid is a comparatively modern doctrine, but it is, to-day, almost universally accepted. There are, however, some prominent syphilographers who still claim the unity of these two lesions, so that any observations in regard to them from reliable sources are worthy of careful consideration. Since about fifteen years ago it has been believed, by certain syphilographers, that early excision of the chancre will prevent the subsequent development of syphilis. The determination of this point is a matter of the highest therapeutical importance. The *Centralblatt für die Medicinischen Wissenschaften*, January 10, 1891, contains an abstract of a paper by Neumann, the eminent syphilographer and dermatologist of the Vienna University, in which he details the results of auto-inoculation of syphilitic patients with the secretion from the primary lesion. If, in from

three to five weeks after infection, inoculation with the secretion of a non-suppurating chancre is followed by any result, which is not always the case, there appears in the course of a week a circumscribed redness which develops into a papule shortly before the appearance of constitutional manifestations. The papule grows larger and firmer with the progress of the eruption, recedes with this, following the course of an ordinary lenticular papule; while the primary lesion grows smaller and softer at the time the eruption appears. Nor does the inoculation-papule, like the chancre, occasion swelling of adjacent lymphatic glands or give rise to the development of firm lymphatic cords or to the formation of crater-like ulcers of cartilaginous hardness. These papules cannot be considered identical with the primary lesion, but as manifestations of constitutional syphilis, as the result of irritation, to which syphilitic subjects react with peculiar readiness. If the inoculation is made with the pus of a chancroid, in three days a pustule forms, with an erythematous areola, beneath which a deep ulcer appears, the base of which becomes indurated in a degree in proportion to the intensity of the infection. The same result, however, may be obtained with the pus from the pustules of acne, eczema or scabies.

The conclusion to be drawn from these observations is that syphilis cannot be aborted by excision of the primary sore. Results of a positive nature, as published, must depend upon errors in diagnosis.

Book Reviews.

[Any book reviewed in these columns may be obtained upon receipt of price, from the office of the Reporter.]

GUIDE TO THE PRACTICAL EXAMINATION OF URINE. By James Tyson, M. D., Professor of Clinical Medicine in the University of Pennsylvania, etc. Seventh edition, revised and corrected. 7½x5½ inches, pp. 255. Philadelphia: P. Blakiston, Son & Co., 1891.

The unimpaired popularity of Dr. Tyson's book on examination of the urine is demonstrated by the regularity with which one edition follows another. This popularity is both deserved and insured by the fact that to the original merit of the book has been added a constant care to keep it fully up to the state of knowledge in regard to the subject, so that each new edition is better than the last. The result is that the book is without an equal—we believe—in the English language for usefulness to students and practitioners. For the former it is almost a necessity, and for the latter it may be a most valuable aid.

In spite of the advanced teachings now given on urine analysis and examination in the first-class medical schools, there are still many physicians who know almost nothing of the subject and who might profit very much by getting and studying a plain and practical book like the one before us. To such physicians and to all students we heartily recommend Dr. Tyson's admirable manual.

POST-MORTEMS; what to look for and how to make them, with sections on Infanticide, Poisons, Malformations, etc. By A. H. Newth, M. D., London. Edited, with numerous notes and additions, by F. W. Owen, M. D., Demonstrator of Anatomy in the Detroit College of Medicine. 12 mo, pp. 136. Detroit, Mich.: The *Illustrated Medical Journal* Co., 1885. (?) Price, $1.00.

This little book begins with directions for the external examination of the body, then follow sections on signs of death from violence, poisoning, etc., and on the internal examination of the body. The latter section is naturally divided into sub-sections containing directions for the examination of the organs of circulation, respiration, digestion, etc., and brief descriptions of the *post-mortem* appearances of the organs and tissues in disease.

The book contains a large amount of useful information, but the matter is so condensed and the descriptions are so brief, that one gets from reading them no helpful picture of pathological anatomy, and no insight whatever into disease-processes as they appear after death.

Literary Notes.

—F. C. W. Vogel, the well-known publisher of Leipzig, announce the appearance at this time of a new journal of neurology called the *Deutsche Zeitschrift für Nervenheilkunde*, six parts to make a volume and to cost about 15 marks. The editorial management is to be in the hands of Drs. Erb, Lichtheim, Schultze and Strümpell. Their preliminary announcement indicates that the new journal will be conducted upon lines which cannot fail to make it a most valuable addition to medical literature.

Notes and Comments.

New Method of Treating Enlarged Prostate.

In a paper published in the *Edinburgh Medical Journal*, March, 1891, Dr. Marotti said: To effect a cure of ischury from prostatic strictures one must understand and meet the diseased condition which produces the enlargement. In prostatic strictures the ischury is occasioned by a mechanical ob-

stacle to the emission of the urine. Now, the therapeutic direction must follow two indications—*Firstly*, To increase the expulsive power, so as to overcome the obstacle; *Secondly*, to remove, or at least to lessen the obstruction, so as to restore the regular passage of the urine. The surgeons of all times have endeavored to carry out the second, rather than the first, of these two questions, and have thought of many different ways. The apparatus invented by Dr. Bottini, of Pavia, completely carries out the idea of making an artificial passage for the urine in the body of the same prostate. The passage of the urine being restored, hypertrophy of the prostate does not any longer entail danger to life, therefore it is useless to take away an organ which, although abnormally enlarged, yet does not affect the general work of the entire body. The therapeutic idea is not that of melting or otherwise destroying the prostate, but that of making a new passage for the urine, to replace the passage which has been obstructed by the abnormal enlargement of the gland. The way of fusion and incision of the prostate by thermo-cautery in such conditions seems rational both as to its immediate effects and as to its ultimate consequences. We need not only to divide the prostatic growth, as the prostatic incisor of Mercier does, but also to keep it open, making at the same time an aperture inside, which will not be quickly closed up, but leaves a permanent groove through which the urine can flow.

The instrument of Dr. Bottini resolves the problem of the practical application of such an idea. The problem was how to heat a certain portion of the instrument, so as to bring it in front of the diseased enlargement which is to be treated, limiting the caustic effect to burn a particular spot, without injuring the urethra and the bladder.

After long and diligent experiments on dead bodies and on living animals, Dr. Bottini succeeded in making an instrument which answers thoroughly the object proposed. The "cauterizatore termo-galvanico" is composed of a metallic tube resembling the catheter of Mercier, internally divided into four compartments for the passage of the conducting electric wires, and the tube for the water, which, entering into one of the canals, runs to its extremity, then passes to the other canal and flows out at the free end, keeping the whole instrument at a constant low temperature. The conducting wires end in two little plates, one-third of a centimeter broad and two centimeters long, placed parallel to each other at a distance of one millimeter, and joined at the bow towards the beak of the instrument, from the curve of which they are separated one centimeter. These plates must get heated to a dull red, the only color which insures destruction of the tissues without causing a single drop of blood. The flow of cold water, keeping all that part of the instrument constantly cold, so that it may not have a caustic action, prevents the epithelium and the mucous membrane of the bladder from being injured, while cauterization of the part of the prostate is being effected.

It is always better to accustom the patient to the use of the instrument before the cauterization, so that its introduction may be easily and quickly done, and the enlargement may be reached at once by applying the cautery exactly to the designed spot. The rule of accustoming the urethra to the passage of the "cauterizatore," so that the instrument may slip by its own weight into the bladder, as Civiale happily expresses it, "C'est l'urethre qui doit avaler la sonde," and so that we can bring the heated portion against the part to be destroyed, is of vital importance. As the patient has been placed in the position used for lithotripsy, unless the bladder be completely empty, we need not inject water. The operation is not painful. Dr. Bottini uses chloroform only occasionally; nevertheless we must insure that the patient will be kept still during the operation, otherwise by a sudden movement the instrument might get displaced, and come against parts which ought not to be touched.

The operative technique consists of three parts:

Firstly, We introduce the instrument, and place the cautery against the part of the enlarged prostate to be burned.

Secondly, We get the cautery heated, and we cauterize to a sufficient degree.

Thirdly, We withdraw the instrument.

In regard to the first, we introduce the instrument into the bladder according to the classical rules prescribed in urethral catheterism. Then we must turn down the beak, as we do in the methodic exploration of the fundus of the bladder, and pulling the shaft so as to hook the neck, we may carry the cautery against the proper spot. If any doubt arises, the position of the instrument

may be ascertained by a finger introduced into the rectum. The instrument being properly placed we allow the water to come in, which can be done by suspending a common pail, or an irrigator of Esmarch, at a certain height, capable of holding six or eight liters of water, at a temperature of about 40° to 50° Fahrenheit.

The battery which Dr. Bottini uses is a Bunsen's, with two liquids, in the improved manner of Pischel, and lately again improved by Dr. Bottini, by the introduction of the accumulators, as he has fully described in his article in the *Lancet* of September 20.

The heating of the cautery must not exceed the dull red; if it does exceed this, and becomes white, the tissues will be too quickly destroyed, and most probably hemorrhage will ensue.

With repeated experiments on dead bodies and on living animals, Dr. Bottini obtained, in one minute, by the cautery being heated to the red color, an eschar about the thickness of a centimeter, and the action being prolonged for another minute, the thickness has become doubled, when he could raise the temperature by one degree, changing the commutator of the battery.

To insure the eschar being formed as indicated, the heated portion of the instrument must be placed against the part to be burned, raising the shaft and bending it gradually, so that the resistance of the diseased tissue having been overcome the beak can be embedded in it. We must then stop the further production of heat by shutting off the current, and let it remain for two or three minutes, so as to give time for the plates to cool, so as to render harmless the withdrawal of the instrument, which will be done in a manner the reverse of that used when it is introduced. We do this in order to prevent the risk of the eschar being brought away with the withdrawal of the instrument.

For the after-treatment we use the soft catheter of Nelaton, always provided that the patient cannot pass water by himself. Dr. Bottini wrote me that a few days ago he had to operate on an old man, suffering from prostatic ischury for more than five years, who after twenty-four hours from operation was able to pass water without artificial assistance. The eschar is completely gone by the tenth, twelfth or fifteenth day.

Dr. Bottini has operated after this method on fifty-seven cases, two of which ended fatally; these, however, were during the early days of the operation, before the instruments had been brought to their present state of perfection. In thirty-two cases a perfect cure had been obtained, in eleven there was an improvement, and in only twelve was no benefit observed. These results in an affection which was so rebellious to ordinary treatment, form a powerful argument in favor of the method; and the author hoped soon to see it adopted more generally by surgeons than it had yet been.

Who Owns the Prescription?

In a paper on the subject of prescription ownership, read before the Philadelphia College of Pharmacy at the Pharmaceutical Meeting, January 20, and published in the *American Journal of Pharmacy*, February, 1891, Mr. Joseph England asks: To whom, then, does the prescription legally belong? To the physician? Certainly not. He has been paid for all services rendered. To the patient? No; for in his recovery to health he has received all that he paid his medical adviser for. To the pharmacist? Yes; by every right of custom and law, provided he has accepted it under certain conditions. If the patient makes a request for its return on presenting it, the pharmacist has one of two lines of action before him. He must either refuse to compound it under such conditions, or express a willingness to compound it and give a duplicate copy. If the latter proposal be refused, he should return the original prescription without compounding. On the other hand, if the prescription is committed to his hands with no primary request for its returnal after being filled, and he has affixed his marks of identity and compounded it, he should retain the original copy as legal evidence that he has prepared such a prescription.

As showing the legal value of a prescription it may be of interest to state that Mr. Robert England informs me he has been subpœnaed in three cases within the last three years to produce certain original prescriptions for the purpose of: 1, to prove attendance in a suit for medical services. Suit was won. 2, to prove that a physician used drugs for malpractice. Physician convicted. 3, to prove that a medical student illegally practiced medicine. In this latter case, the patient dying and the student being unable to give a certificate of death, the

case was examined by the Coroner, and when confronted with the prescriptions confessed guilt. In each instance, however, the legal authorities returned the prescriptions, thus tacitly admitting their ownership.

But this whole question of prescription ownership, to my mind, is essentially one of law, and viewing it from that standpoint, it presents some most interesting features. I have been fortunate in securing for this afternoon's meeting an expression of opinion from that eminent authority on civil law, Richard C. McMurtrie, of this city. He writes me as follows:

BULLITT BUILDING, January 15, 1891.

Dear Sir: You ask who is the owner of a prescription, the physician who writes it, the patient for whose use it is written, or the apothecary to whom it is handed to compound?

Evidently the only dispute can exist in a case in which the physician and the patient have parted with the possession of the paper, and it has lawfully come into the hands of the apothecary, at the instance of the patient.

The universal practice appears to me to point where the title is for all purposes but one. I presume it is the custom to refill a bottle with a prescription indicated on the label. The patient is not required to purchase a new prescription every time he wishes the order filled—and this appears to me plain, from the consideration that he could secure this by copying the paper before using it.

Moreover, he has paid for the composition and skill required for that purpose, and the delivery to the apothecary is for a particular object, and there is in that transaction nothing implying a transfer of property in anything by the patient to the apothecary.

But the practice certainly is for the apothecary to retain the documents. I presume no one ever heard of a prescription being returned with the dose to the patient.

It is obvious there is nothing indicative of a sale or transfer of title on that footing in this transaction. There is something analogous in respect of a check. The return of these instruments arises out of distinct considerations. Accepted bills are never returned to the drawer if paid.

Then there is a consideration which I consider conclusive, seeing that the thing is open to a contract, and the parties have chosen to make none. If under this view of the case the usage is not of itself conclusive, I think the apothecary has the right to retain, to warrant himself, if a question shall arise, as to correctness of conduct.

I may add the claimant must always show his title—if the title be in equipoise he must fail.

It also occurs to me that this paper is merely a substitute for a verbal direction, and no doubt there are multitudes of verbal orders filled that might be written.

On the whole, I should think there ought to be no doubt that the apothecary may, if he sees fit and is foolish enough to run the risk, put the paper in the fire. There can be no half-way measure—he either owns it absolutely, or not at all. There can be no duty to produce it for inspection, or to give copies, while it would be silly to refuse to do so when reasonably demanded.

It is very unusual in this country to look to the consequence of a rule. It may be well to do so. If the patient is the owner—he may at any time within six years demand the paper, and if it is not surrendered, sue as for a tortious conversion of his property. If he can't do this he certainly has no title. I would ask if executors ever inquired for prescriptions given the testator; if they belong to the testator, they are assets.

R. C. MCMURTRIE.

Paroxysmal Tachycardia.

Dr. H. C. Wood, in the *University Medical Magazine* for March, presents the history of a case, in a physician, of a perplexing cardiac disturbance to which he has attached the name, tachycardia. The affection is one of several forms of "cardiac nerve storms" which may or may not be associated with organic lesion of the heart; and this lesion, in turn, may or may not be essential—it may, for example, be trophic or secondary to a nerve lesion, as in the cases reported by Teissier, in which the aortic valves were found to be punched out as with a perforating ulcer. Whether this trophic explanation be accepted or not, Dr. Wood has no remaining doubts that there are cases of violent nerve storm, accompanied with excessive pain—nerve storms similar in character to those that constitute the "gastric crises" of posterior sclerosis—in which no lesion of the valves

can be discovered; and these cases differ also from the paroxysms of true angina. Dr. Wood is inclined to restrict the use of the term tachycardia. In accordance with this etymology, it could be made to apply to any case of rapid action of the heart. But he regards it as fortunate that there has not yet been any very frequent use of the word, sufficient to affix to it any settled meaning, and he suggests its limitation to those diseased conditions, marked by violent action of the heart, that are not dependent on organic cardiac disease, or on febrile excitation, or on a general constitutional affection, such as exophthalmic goitre. He proposes the restriction of the name tachycardia to cases in which very violent action of the heart occurs without obvious reason. The greater number of these cases resolve themselves into the following three classes: (1) paralysis, centric or peripheral, of the pneumogastric or inhibitory nerve; (2) cases of reflex disturbance, as from the irritation of a biliary calculus or of the sexual organs in the female; and (3) those in which the affection is a neurosis, as when it is due to hysteria or allied conditions, or to exhaustion from privation, or to fright, or to the too rapid ascent of flights of stairs.

Carrying the distinction still further, Dr. Wood places in a class by themselves certain rare cases of cardiac motor-nerve storms to which he applies the title of *essential paroxysmal tachycardia*, several of which cases have been found by him in the contributions of Nothnagel. In the most striking of these cases, the patient was subject to violent action of the heart that came on abruptly, even during absolute quiet, without marked pain, but with some sense of anxiety. In a moment the pulse would go up to 180, the heart sounds meanwhile remaining normal. The duration of the tachycardial paroxysm varied from a few minutes to several hours. In the instance of the physician, already referred to as Dr. Wood's typical patient, the pulse-rate rises as high as 160 if the patient remains at rest, and as high as 200 if he exerts himself, as in walking. The access of the paroxysm is abrupt, and so is its cessation. During rest the disagreeable sensations belonging to the attack are hardly more than slight pain and a sense of thoracic fulness. The patient, Dr. H. C., is now over eighty-five years of age, and since about his sixtieth year has had these paroxysms, on an average, once in every three weeks, although he has had as many as four in a month. This was his experience prior to 1888; latterly the attacks have been more frequent. The paroxysms may be brief and they may be broken up by some medicament after a few minutes—but various forms of treatment tend to lose their efficacy after a certain number of trials—or may be protracted to ten or even twenty-six hours. The patient has been examined frequently for cardiac lesion by various physicians of high rank, both during the attacks and during the intervals, but at no time has any murmur been found. His health has continued good, and now, in his eighty-seventh year, he continues to be sufficiently vigorous to be able to ride about in his carriage for hours at a time, and even to walk considerable distances. The attacks have become very frequent, occurring during the last year almost every day, but they are often terminated promptly by the drinking of a glass of cold water. The pulse now rarely rises above 135, there is little distress, and he can even write a letter in the height of a severe paroxysm without the handwriting showing any tremulousness or otherwise giving evidence that it is the work of a tachycardiac old man.

In conclusion, the following is Dr. Wood's definition, given in his own words, of essential paroxysmal tachycardia: "The definition of the disease would be that of a recurrent paroxysmal neurosis in which attacks of excessively rapid heart action occur without obvious immediate or disposing cause, and without pronounced pain or excessive cardiac distress, the pulse rising to 160 and upward, the sounds of the heart remaining normal, and it being frequently possible to arrest the attacks by drinking a glass of cold water and certain other procedures of apparently trifling import, the disease having apparently no tendency to shorten life or to develop organic disease, and being entirely compatible with great mental and physical activity." In regard to the influence over this affection of so simple an act as the swallowing of a small amount of cold water—which is probably a characteristic phenomenon of the trouble, since it has been noted in nearly all the fully reported cases—Dr. Wood refers to observations by Dr. S. Meltzer, which show that swallowing is attended with a loss of tone in the vagus centre, and with a consequent cardiac inhibition, but it is also possible

that the swallowing of cold or hot liquid begets a stimulus to the cardiac centre by an irritation of the peripheral gastric filaments, since it is well known that an irritation of the abdominal nerves is competent to inhibit the heart in a reflex way; and the temperature at which the liquids are swallowed is important, since, if the water, when taken by the patient, is only moderately cold, much larger quantities of it are required.—*New York Medical Journal*, March 14, 1891.

Open and Subcutaneous Tenotomy.

In the *Medical Chronicle*, February, 1891, is an abstract of an article by Sabatier on "Open tenotomy and subcutaneous tenotomy," published in the *Lyon Méd.*, December 28, 1890, which says that since the introduction of antiseptic surgery there has been a tendency to abandon subcutaneous tenotomy in favor of tenotomy by means of an open wound, and that Sabatier discusses the reasons for and against each method, taking in turn the tendons which are most often divided.

The sterno-mastoid.—The reasons given by those who favor the open method are two: The absolute security against accidental injury of vessels, and the ease with which one can obtain complete division. In support of the first reason, three cases of wounding of large vessels, such as the internal and external jugular veins, are quoted. In addition, abnormal vessels may be injured. In support of the second reason it is argued that there are various forms of torticollis, the most simple being limited to contraction of the sternal head of the muscle. The clavicular head is, however, almost always affected, and in the more complex forms the levator anguli scapulæ, splenius, trapezius and scalenes. There are also fibrous forms affecting various parts of the cervical fascia. It is in these cases that subcutaneous tenotomy is both incomplete and dangerous.

In reply to these reasons Sabatier contends that the dangers of subcutaneous tenotomy have been exaggerated, and that the open method is unsuitable.

Out of the thousands of subcutaneous sections of the sterno-mastoid only a few cases of wounds of large vessels are known, although he admits that perhaps all have not been published. All danger may be averted by entering the knife at the internal border of the muscle, and fifteen to twenty millimeters above the clavicle, to avoid the horizontal part of the anterior jugular vein as it runs beneath the muscle to join the external jugular. The knife edge must then be turned against the deep surface of the muscle, and the division itself effected by pressure, and not by sawing movements of the blade, counter pressure being made with the thumb on the external surface. By this method of division from behind forwards only the deep aspect of the skin is in danger; if performed from before backwards the vessels may be injured. He therefore concludes that in ordinary cases subcutaneous tenotomy of the sterno-mastoid is not more dangerous with regard to immediate accidents than open tenotomy.

The great inconvenience of the open method is the cicatrix left in an exposed region. Even if it be smooth, it is generally horizontal, and all horizontal cicatrices are more visible than vertical ones. Moreover, it undergoes vertical displacement from below upwards as age advances, so that it may even reach as high as the middle of the neck. If the wound suppurates, or keloid growth subsequently attacks the cicatrix, it becomes much more unsightly.

For this reason, Sabatier's second conclusion is, that in ordinary cases of torticollis, it is preferable to practice subcutaneous tenotomy. With regard to the very complex cases, he believes that nearly all of them can be cured by subcutaneous section, and subsequent continuous extension by means of some mechanical apparatus, but in very exceptional cases open tenotomy ought to be adopted.

Tenotomies of the lower limb.—These are performed in three regions—at the root of the thigh, on the adductors and the muscles attached to the anterior iliac spinus; at the knee, on the hamstring tendons; and at the foot, on the tendo Achillis, and plantar aponeuroses.

At the root of the thigh.—There are no advantages whatever in open tenotomy here, and the subcutaneous method should always be chosen.

Hamstring tendons.—Sabatier advises open tenotomy for the biceps tendon, because one can better avoid the external popliteal nerve. A cicatrix in this region is not of importance, and the division can be made more complete. It is also best for the semi-membranosus and semi-tendinosus, because of the more complete division and the security

from wounding the deep vessels. Inflammations of the knee-joint often spread to the tissues below the knee, and the vessels get distorted and fixed in unusual positions.

After the operation is completed, he leaves the wound open, and packs it with iodoform gauze; sutures should not be used, because after forcibly straightening the limb, the soft parts are extensively lacerated, and a large quantity of plastic exudation is thrown out, which causes tension and suppuration if the wound be firmly closed with sutures.

Tendo Achillis and plantar aponeuroses.—For the tendo Achillis the subcutaneous method is the best, and the section from the deep surface is the easiest, because the flexion of the foot necessary to make the tendon prominent, also draws it into close contact with the skin, rendering it difficult to pass the tenotome between the tendon and the skin. It is also better to do it from the inner side, because in some cases of club-foot the posterior tibial vessels become tortuous and spread over a large surface, and are thus liable to injury if one punctures from the outer side. Again, in cases of club-foot, the tendon is much more visible and prominent on the inner side, and so more easily divided from that side. With regard to division of the plantar aponeuroses, he thinks subcutaneous section quite sufficient, and condemns the free, open and extensive division advocated by Phelps as being in almost all cases more than is necessary to reduce the deformity.

Laparotomy for Disease of the Liver.

The Paris correspondent of the *Medical Press*, February 11, 1890, says that recently M. Routier related an interesting case of laparotomy for jaundice of a severe type. A nurse in the hospital was seized with severe hepatic colic lasting twenty-four hours. In spite of energetic treatment jaundice set in, the fecal excretions were discolored and the urine almost black. The liver was felt below the false ribs, and the gall-bladder was painful. For a whole month the condition of the patient remained unchanged, and at the end of that time vomiting set in, and the patient became much emaciated. Believing that a biliary calculus was obstructing the bile duct, the surgeon determined to explore the region, and for that purpose laid open the parts by an incision on a level with the inferior edge of the liver. Passing his fingers through the wound he felt the gall-bladder, which did not seem in any way distended, and consequently was not obstructed. He passed his fingers then over the inferior edge of the hepatic organ, but found nothing abnormal. Before withdrawing his hand he felt the head of the pancreas, but no tumor was discovered there. Finally, he closed the wound, and, strange to say, the vomiting, which had been previously uncontrollable, ceased, and in two days afterwards the jaundice paled, and in a week the urine assumed its normal color, and the patient speedily recovered. The speaker could only explain the happy result by the fact that the massage displaced some mucous collections which had obstructed the flow of the bile.

Post-partum Hemorrhage Treated with Caffeine.

Misrachi, in the *Journal de Médicine*, January 25, 1891, recommends the subcutaneous injection of caffeine as more efficient than ergotin in the treatment of post-partum hemorrhage, especially when there has already been much loss of blood, and delay is dangerous. He gives the following prescription.

℞ Sodii benzoatis . . . . . ℥ijss
Caffeinæ . . . . . ℥jss-℥ij
Aquæ destillatæ . . . . . f℥j
M.

Of this solution, a drachm, which contains twelve and a half or fifteen grains of caffeine, is to be injected at once, and subsequently from a drachm and a half to two drachms and a half in twenty-four hours. The solution should always be employed warm.

To Remove Dark Color from Comedones.

The *British Journal of Dermatology*, February, 1891, gives the following prescription of Unna and Leistokow for removing the unsightly "black-heads" which are so often an annoyance to a patient and a trouble to the physician.

℞ Lanolin . . . . . 10 parts
Vaselin . . . . . 20 "
Peroxide of hydrogen . . . . 20–40 "